Exhibit A

UNITED STATES ENVIRONMENTAL PROTECTION AGENCY
REGION IX
75 Hawthorne Street
San Francisco, CA 94105-3901

NOV 30 2006

Mr. Tom Howard
Acting Executive Director
State Water Resources Control Board
1001 I Street
Sacramento, CA 95814

Dear Mr. Howard:

Thank you for submitting the Section 303(d) water body list for 2004-2006. We received California's 2004-2006 Section 303(d) submittal on November 24, 2006. I commend the State and Regional Boards for their diligent efforts to improve the water body assessment process that supported the 2004-2006 listing decisions. I am pleased that the State and EPA agreed on more than 99% of the State's assessment determinations. EPA is acting today to approve the State's inclusion all waters and pollutants identified in its three part Section 303(d) list with the exception of Walnut Creek for toxicity.

As requested in State Board resolution 2006-0079, we are still reviewing the State's assessment of Walnut Creek. We are also continuing to review the State's assessment of other waters and pollutants not included on the final list, including the beaches identified in the State Board resolution for additional analysis by EPA. Upon completion of our review, we will transmit a second decision concerning those additional State assessments, and identify additional waters for inclusion on the 303(d) list if necessary. If we identify additional waters and pollutants for inclusion on the 303(d) list, we will provide the public an opportunity to comment on the additions to the list. We expect to make this second decision in early 2007.

We carefully reviewed the State's listing decisions, assessment methodology, and supporting data and information. Based on this review, we have determined that California's 2004-2006 list partially meets the requirements of Section 303(d) of the Clean Water and EPA's implementing regulations. EPA hereby approves the listings identified in the three tables that comprise the State Section 303(d) list:

1. List of Water Quality Limited Segments Still Needing Total Maximum Daily Loads[1],
2. List of Water Quality Limited Segments Being Addressed By USEPA Approved TMDLs, and
3. List of Water Quality Limited Segments Being Addressed By Actions Other Than TMDLs.

The statutory and regulatory requirements, and a summary of our review of California's compliance with applicable requirements, are described in Enclosure 1.

1 As discussed above, EPA is taking no action at this time with respect to the listing of Walnut Creek for toxicity.

We appreciate your submittal of schedules for TMDL development. We understand these schedules serve the purpose of priority rankings required by federal regulations at 40 CFR 130.7(b). We are not taking action on these schedules as federal regulations do not require EPA to act upon TMDL schedules or priority rankings; however, we expect the schedules will guide the State's TMDL development efforts in the future.

The public participation process sponsored by the State Board included several public hearings and opportunities to submit written comments. The State prepared a responsiveness summary explaining how the State considered comments in the final listing decisions. The State's public participation activities were consistent with federal requirements.

The State Board's approval resolution asks EPA to focus our attention on sediment listings for Klamath River and Pescadero Creek. Regarding Klamath River, the State listed the Klamath River Hydrologic Unit, Lower Hydrologic Area, Klamath Glen Hydrologic Sub Area (HSA) as impaired due to sedimentation/siltation. The State Board approval resolution asks EPA to evaluate whether this listing decision applies to waters on tribal lands. EPA reviewed the geographical delineation of the Klamath Glen HSA and has determined that portions of the Klamath River and its tributaries located in this HSA are located on tribal lands while other portions are located on lands under State jurisdiction. EPA's partial approval of California's Section 303(d) list does not extend to any water bodies located within Indian country, as defined in 18 U.S.C. Section 1151. Therefore, this approval action applies to all waters in Klamath Glen HSA that are under California jurisdiction, including portions of the mainstem Klamath and its tributaries within the HSA, and does not apply to other portions of waters in Klamath Glen HSA that are located in Indian country.

Regarding Pescadero Creek, public testimony presented at the adoption hearing suggested the State Department of Fish and Game and National Marine Fisheries Service may have information indicating Pescadero Creek is not impaired by sediment. EPA did not contact these agencies about this issue and we have received no information from them. In reviewing the listing decision, EPA focused our review on the record compiled and submitted by the State and conducted no independent fact-finding to supplement the assessment record. Therefore, we did not reconsider the State's decision to list Pescadero Creek for sediment. The State should consider any new information concerning Pescadero Creek during the 2008 listing process.

If you have questions concerning this decision, please call me at (415) 972-3572 or Peter Kozelka at (415) 972-3448.

Sincerely yours,

30 Nov. 2006

Alexis Strauss, Director
Water Division

Enclosure

UNITED STATES ENVIRONMENTAL PROTECTION AGENCY
REGION IX
75 Hawthorne Street
San Francisco, CA 94105-3901

MAR 0 8 2007

Tom Howard
Acting Executive Director
State Water Resources Control Board
P.O. Box 100
Sacramento, CA 95814

Dear Mr. Howard:

EPA received California's Clean Water Act Section 303(d) List of Water Quality Limited Segments for 2004-2006 on November 24, 2006. On November 30, 2006, we approved the State's inclusion of waters and pollutants identified on the three-part Section 303(d) list with the exception of Walnut Creek toxicity. I am pleased to acknowledge the State and EPA agreed on more than 99% of the State's assessment determinations.

As indicated in my November 30 letter, we reviewed the State's assessment of waters and pollutants not included on the State's list, including coastal beaches the State Board identified as particularly appropriate for further review. We completed our review and are acting today to partially disapprove the State's submittal due to the omission of several water bodies and associated pollutants that meet federal listing requirements. The water bodies and associated pollutants that we are adding to the State's 2004-2006 list of water quality limited segments are identified in the enclosed tables. Our rationale for adding the water bodies and pollutants is described in Enclosure 1.

We will now solicit public comments on the additions to the State's 303(d) list as identified in Tables 1 and 2. We will provide a responsiveness summary for comments received on these additions as well as how we considered public comment in the final assessment decisions. We will transmit our final decisions regarding these waters added to the State's 2004-2006 303(d) list for incorporation in the State's water quality management plan.

If you wish to discuss this, please call me at (415) 972-3572 or call Peter Kozelka at (415) 972-3448. We would be pleased to brief you and Board members, if you wish, on this matter.

Sincerely yours,

Alexis Strauss
Director, Water Division

Enclosures
cc: SWRCB members

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UNITED STATES ENVIRONMENTAL PROTECTION AGENCY
REGION IX
75 Hawthorne Street
San Francisco, CA 94105-3901

JUN 2 8 2007

Dorothy Rice
Executive Director
State Water Resources Control Board
P.O. Box 100
Sacramento, CA 95812-0100

Dear Ms. Rice:

I am hereby transmitting to you the final list of waters and pollutants that EPA is adding to the State's final 2004-2006 Section 303(d) List (see Enclosure 1). We have separately identified those waters which we proposed to add and those which were already on the State's List (see Enclosure 2). A detailed responsiveness summary explaining public comments received and EPA's responses is also enclosed (see Enclosure 3).

On March 8, 2007, EPA took action on California's 2004-06 §303(d) list, disapproving the State's decision not to list 36 additional water bodies and additional pollutants for 34 waters already listed by the State.

EPA provided public notice and solicited public comment on its identification of additional waters and pollutants for inclusion on California's list. EPA reviewed the 19 written comments received from the State and other commenters. We concluded that one water body, North Fork Feather River, does not show impairment due to copper and thus does not warrant inclusion for copper on the list of additional waters and pollutants identified by EPA. We have also determined that several water body-pollutant combinations identified by EPA on March 8 were already included by California on the State's 303(d) list of water quality limited segments; therefore EPA has revised the list of our additions accordingly.

EPA has not issued an approval for the State's decision to include Walnut Creek for toxicity on the list. This waterbody-pollutant combination was originally listed on the State's 2002 list; however, the available monitoring data provides mixed toxicity results and so continued monitoring will yield better assessment conclusions in 2008. In the meantime, EPA requests the State retain Walnut Creek-toxicity on its 2004-06 list and include a footnote stating that EPA deferred action on this listing in 2004-06.

EPA is also providing clarification regarding the contents of State's 2004-06 303(d) List of Water Quality Limited Segments Being Addressed by USEPA Approved TMDLs. EPA has issued approvals of TMDLs adopted by California after November 30, 2006, which should be included. This portion of the State's 303(d) List does not accurately reflect the specific water body-pollutant combinations of some TMDLs established by the State and approved by EPA

indicates that the in-stream concentration of copper exceeded the applicable limit on 6 of the 98 sampling events between 1995 and 2003. Sampling for Coyote Creek Reach 1 indicates that the in-stream concentration of lead and zinc exceeded the applicable limit on 7 of 62, and 6 of 62 sampling events, respectively. Sampling for San Jose Creek Reach 1 indicates that the in-stream concentration of selenium exceeded the applicable limit on 11 of 78 sampling events. Sampling for San Gabriel Estuary indicates that its applicable limit for copper was exceeded on 5 of 40 sampling events. With respect to each of the listed waters it is implausible, in light of the detected frequency of the exceedances, to conclude that the applicable limit was exceeded, on a 4-day average, less frequently than once every three years. EPA has reviewed the additional sampling data for Coyote Creek and San Jose Creek submitted to the State Board in February 2007. Although the data indicate that the frequency of the exceedances has been reduced, EPA concludes that the subject waters' criteria have not been attained, and that listing is warranted.

Algal Growth

4. **Several commenters supported EPA's recommendation for the State to revisit and expand its assessment methodology for evaluating algae and potential impacts to designated uses. One commenter noted the algal methodology was inconsistently applied by State Board during development of the 2006 list.**

   One commenter requested the State Board to employ a "catastrophic concept" in evaluating algal growth. This approach would apply the value of 30% or greater coverage, 50% of the time to be used as threshold for automatic listing. This algal coverage value was selected because "any scientist would be hard-pressed to refute [it] as being indicative of a major water quality impairment". The commenter emphasized this approach should be used in the next listing cycle and "until the State develops its own guideline".

Response: Comment noted. EPA will forward this comment (and specific 30/50% value) to State and Regional Board staff for their consideration of assessment of algal coverage in surface waters during the 2008 next listing cycle. Also, EPA will assist the State and Regional Board staff to develop more complete assessment methodologies to address narrative water quality objectives for nuisance and excessive biostimulatory agents.

5. **Several commenters requested EPA to amend California's 2006 list to include the Klamath River and the Iron Gate and Copco Dam reservoirs due to impairments caused by "toxic algae", specifically *Microcystis aeruginosa* and microcystin toxin. [*Microcystis aeruginosa* is a species of cyanobacteria or blue green algae. Different cyanobacteria and other algae can produce and release different toxins into aquatic systems.]**

Response: EPA and California recognize the public health and environmental impacts associated with *Microcystis aeruginosa* (blue green algae and associated toxins) in the Klamath River and Iron Gate and Copco Dam reservoirs and are taking aggressive steps to address those impacts. In light of those actions and for the reasons discussed below, EPA has decided not to add at this time *Microcystis aeruginosa* and microcystin toxin as additional pollutants for which the

Klamath River and the Iron Gate and Copco Dam reservoirs are identified as impaired on California's 2006 Clean Water Act section 303(d) list.

California has identified the Klamath River and its reaches that include the Iron Gate and Copco Dam reservoirs as impaired due to nutrients, "organic enrichment/low dissolved oxygen," and temperature. The State's determination to list those water body-pollutant combinations as impairments was approved by EPA on November 30, 2006.

EPA believes that nutrient, dissolved oxygen, and temperature loadings contribute to the development of toxins associated with blue green algae in the Klamath River and its tributaries. EPA further believes that TMDLs developed for those pollutants in the Klamath River and its tributaries will be sufficient to address the public health and environmental impacts of blue green algae. In light of the Klamath River's current listings for those algae-causing pollutants, and the current schedule for TMDL development related to those pollutants, EPA believes that California's decision to not identify blue green algae itself as an additional pollutant at this time was reasonable and need not be disapproved by EPA in the context of its review of California's 2006 list. Under these circumstances, EPA believes that even if other pollutants are causing or contributing to an impairment, listing additional water-body pollutant combinations at this time is not likely to result in development of TMDLs that would be any more effective in reducing loadings of pollutants like nutrients, organic enrichment, and temperature that EPA believes contribute to the presence in the Klamath River of blue green algae and associated toxins. As nutrient, dissolved oxygen and temperature TMDLs currently being developed for the Klamath River and its tributaries will be sufficient to address the public health and environmental impacts of blue green algae, EPA does not consider it necessary to evaluate whether the state would have had a basis to separately list these same waters for blue green algae in the absence of these other approved listings.

a. As stated by the commenter, "a perfect environment for the growth and proliferation of blue green algae, or what are known as cyanobacteria" is created by high levels of nutrients in a warm, quiescent environment.

Response: In general, we concur with the commenter's description of aquatic conditions that promote blue green algae blooms. In EPA's view, scientific studies indicate a complex and not fully understood relationship between various environmental factors and the proliferation of blue green algae. Past research has identified the general factors such as physical (water mixing and temperature), chemical (nitrogen, phosphorus, organic matter), and biological (heterotrophic grazing) conditions appear correlated to blue green algae blooms. Other parameters that are indicators of potential blue green algae growth include: the presence of chlorophyll-a, the ratio of chlorophyll to phosphorus, and the degree of light penetration as measured by the amount of suspended solids, or secchi depth. In freshwater systems, several species of blue green algae may be present and the limiting nutrient is probably species-specific: e.g., nitrogen may control *Microcystis aeruginosa*, but it may not inhibit growth of *Anabaena* which can fix molecular nitrogen. Both algal types have been observed in the Klamath River and, upon senescence, could release toxins into the water. However, the presence of blue green algae does not directly correlate to levels of aqueous toxins; that is, the blue green algae may be present although not producing the toxic effect. EPA scientists have also promoted the use of hydrologic and water

quality models to help our understanding and predictive abilities for blue green algae blooms and potentially elevated toxin levels in surface waters (Hudnell, in press). Based on this technical information, EPA's approach for preventing excessive algae and blue green algae relies on management of the physical and chemical factors described above, along with insights from modeling results.
See http://www.nalms.org/Resources/BlueGreenInitiative/Overview.htm and Graham, et al. 2004; Camargo and Alonso, 2006.

Here is a summary of selected EPA and State actions, including TMDLs, addressing blue green algae in the Klamath River and the Iron Gate and Copco Dam reservoirs.

- EPA chairs the Klamath River Blue Green Algae Working Group, which officially convened in late spring 2006. See http://www.humboldt.edu/~kwi/rfp.html. The working group, is comprised of tribal, local, state and federal entities, and landowners in the Klamath Basin, and assisted by a coordinator through Humboldt State University's Klamath Watershed Group. The working group administers funding to conduct a two-year study of the presence, distribution, and possible causes of blue-green algae in the Klamath Basin. The group oversees the study and will help translate the results into management actions to reduce the occurrence, frequency and/or duration of these blooms.

- EPA has developed draft TMDLs for the Lower Lost River to address low dissolved oxygen, elevated pH and excessive algae impairments; the Lower Lost River is part of the Klamath River Basin, and is upstream of the Copco and Iron Gate reservoirs. These TMDLs recognize the impairments are caused by excessive discharges of nutrients, organic matter and biological oxygen demand and identify 50% reductions of these nutrients to attain water quality standards. EPA is currently inviting public comments on these TMDLs.
See http://www.epa.gov/region09/water/tmdl/progress.html.

- EPA Region 9, in coordination with EPA Region 10 and Oregon Department of Environmental Quality, is assisting Regional and State Board staff in developing TMDLs for nutrients, dissolved oxygen and temperature impairments in the Klamath River, including the Copco and Iron Gate reservoirs. The technical approach is similar to that described above for Lower Lost River. We expect these TMDLs to identify both point and non-point source allocations to reduce nutrient and organic enrichment loads and also to determine optimal surface water temperatures for the Klamath River. This is expected to improve ambient water conditions, control conditions that contribute to blue green algae blooms, and preclude the need for additional control measures.

- California's State Water Resources Control Board (State Board) chairs the Statewide Blue Green Algae Work Group and has established a website devoted to blue green algae. See http://www.waterboards.ca.gov/bluegreenalgae/index.html. The Blue Green Algae Work Group, including the State's Office of Environmental Health and Hazard Assessment (OEHHA), recently posted draft voluntary guidance to protect people, pets and livestock from the effects of harmful algae blooms in non-marine waters of California. State Board has allocated funding for statewide sampling and analysis of blue-green algae during the bloom season, including some

sample collection in Klamath River. State Board has also contracted with OEHHA to support an exposure risk assessment based on available research and data and the forthcoming bloom season results. State Board has indicated working with PacifiCorps to develop and implement interim measures (e.g., reservoir management plans) to reduce algal blooms. See letter from Tam Doduc to Amy Vanderwarker, dated March 23, 2007.

- The North Coast Regional Board has recently resolved that staff shall continue to work with the PacifiCorps, tribes, counties and other interested parties, including posting by the Regional Water Board if necessary. In the same resolution, the Regional Board has indicated they are likely to require monitoring for: chlorophyll-a, blue green algae density, and microcystin toxin as part of TMDL development and implementation.
See North Coast Regional Board Resolution #R1-2007-0028, dated April 26, 2007, at http://water100.waterboards.ca.gov/rb1/orders/asp/d.asp?discharger=&Submit=Submit&ordernumber=&ordertype=Resolution&county=Siskiyou&ID=813.

b. The commenters suggest the State Board declined to list these waterbody-pollutant combinations on the bases that there are no applicable water quality standards and that blue green algae is not a "pollutant."

Response: EPA did not rely on these factors in determining that the State's decision was reasonable. EPA is not taking a position at this time on whether blue green algae may be considered a "pollutant" or whether there may be applicable state water quality standards related to the presence of blue green algae. EPA regulations and guidance do not expressly address the question of whether a state is required to list certain waters for blue green algae when other waterbody-pollutant combinations addressing conditions contributing to algae growth would likely address the concerns posed by blue green algae. Considering the current waterbody-pollutant combinations on California's 303(d) list associated with the presence of blue green algae, as well as the other actions being taken to address concerns resulting from blue green algae, EPA does not believe that section 303(d) of the Clean Water Act (CWA) or EPA's regulations require the addition of blue green algae to California's list at this time or preclude EPA's approval of that list.

EPA notes the topic of "toxic algae" was discussed during the State Board's October 25, 2006 meeting on the State's 303(d) List. In the public forum, Board members heard from interested parties speaking to both sides of the issue of adding toxic algae to the State's 303(d) List. In the 303(d) hearing, Board members made reference to the following: blue green algae were natural features and were not discharged from anthropogenic sources, blue green algae growth was probably affected by flow conditions which are influenced by water supply (largely outside EPA jurisdiction), and problems occur when blue green algae are out of balance. Staff stated that "nutrients...and quiet water control its growth" and recommended that blue green algae were best addressed via "quite low" nutrient levels in TMDLs under development for Klamath River. The State Board did not entertain a specific motion pertaining to *Microcystis aeruginosa* and microcystin toxin during the hearing, rather several board members expressed the notion to "cue it up as a priority" for the 2008 listing cycle.
See SWRCB Oct. 25, 2006 transcripts at http://www.swrcb.ca.gov/tmdl/303d_lists2006.html.

EPA's approval of California's determination not to add to its list of pollutants impairing the Klamath River, and the Iron Gate and Copco Dam reservoirs, should not be construed as a suggestion by EPA that the public health and environmental impacts associated with blue green algae or *Microcystis aeruginosa* in the Klamath River are trivial or need not be addressed. Rather, based upon the current record, EPA considers California's present listings for the Klamath River are sufficiently comprehensive, and trigger the requirement to establish TMDLs sufficiently stringent to address those impacts.

Pursuant to 40 CFR 130.7(d), California is to submit its revised 303(d) list of waters and pollutants causing impairment by April 1, 2008. The State's notice soliciting data in support of the 2008 list includes a tentative schedule indicating that the State Water Resources Control Board will approve and submit its list in April 2008. Commenters are encouraged to submit additional data and information regarding *Microcystin aeruginosa* and the Klamath River to the North Coast Regional Water Quality Control Board, as they will review available data and complete water quality assessments for the 2008 listing cycle. The Regional Board will generate the draft 2008 List for its waters and will invite public comment prior to sending its recommendations to SWRCB. After compiling the Regional Boards' 303(d) Lists, the State Board will hold public hearing prior to its approval and subsequent submittal to EPA. California's process should afford a timely opportunity for the State to assess whether the current list of pollutants impairing the Klamath River is sufficiently comprehensive, and whether the resultant TMDLs will adequately address *Microcystis aeruginosa* and other blue green algae. It is also possible the Klamath River Blue Green Algae Working Group will come up with additional information relevant to the State's decision whether to list these waters for blue green algae or *Microcystis aeruginosa*.

EPA remains open to re-assessing its present determination regarding the listing of impairments in the Klamath River and will coordinate with the North Coast Regional Board and State Board during the 2008 listing cycle.

c. In addition, the commenters urge EPA separately to direct the State Board and Regional Board to amend the Basin Plan to establish appropriate water quality criteria/water quality objectives for *Microcystis aeruginosa* and microcystin toxin as part of California's implementation of its CWA Continuing Planning Process and WQS review obligations established by CWA sections 303(c) and (e), 33 U.S.C. § 1313(c), (e).

Response: Comment noted. EPA will forward the request to establish water quality criteria to both State Board and North Coast Regional Board for their consideration as a Basin Plan amendment.

6. Several commenters supported EPA's addition of Coyote Creek for toxicity, zinc and lead.

Response: The reaches of Coyote Creek that EPA identified for inclusion on March 8, 2007, are retained on the State's final 2004-06 §303(d) List.

KLAMATH RIVERKEEPER

An Affiliate of the Waterkeepers Alliance

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April 13, 2007

Via Electronic Mail and Facsimile

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U.S. Environmental Protection Agency Region IX
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E-mail: kozelka.peter@epa.gov

Re: Comments on EPA Approval of California's Clean Water Act Section 303(d) list of Water Quality Limited Segments and Associated Pollutants/Pollution

Dear Mr. Kozelka:

The Karuk Tribe of California and Klamath Riverkeeper ("the Citizens") hereby submit comments on the U.S. Environmental Protection Agency ("EPA")'s proposed approval of California's Clean Water Act (CWA) section 303(d) list of water quality limited segments ("WQLSs") and associated pollutants/pollution ("the California 303(d) List") referred to in EPA's Federal Register Notice, 72 Fed. Reg. 12175 (March 15, 2007).

The Citizens urge EPA to amend the California 303(d) List to add that the Klamath River and the Copco and Iron Gate Dam Reservoirs ("the Reservoirs") are failing to attain applicable California Water Quality Standards ("WQS") set forth in the California Regional Water Quality Control Board, North Coast Region ("Regional Board")'s Water Quality Control Plan for the North Coast Region ("the Basin Plan") due to the contamination of these waters with elevated levels of *Microcystis aeruginosa* and microcystin toxin. Elevated levels of *Microcystis aeruginosa* and microcystin toxin are causing these waters to fail to meet Basin Plan WQS for several designated water quality objectives and designated beneficial uses. While the California State Water Resources Control Board ("State Board's") current 303(d) List already lists the Klamath River as a WQLS due to its failure to meet Basin Plan WQS for nutrients, dissolved oxygen, and temperature, the California 303(d) List inappropriately fails to indicate that the Klamath River is also impaired due to its failure to meet several other water quality objectives and beneficial uses as a result of *Microcystis aeruginosa* blooms. The EPA should amend the California 303(d) List to remedy this deficiency.

In addition, the Citizens urge EPA separately to direct the State Board and Regional Board to amend the Basin Plan to establish appropriate water quality criteria/water quality objectives for *Microcystis aeruginosa* and microcystin toxin as part of California's implementation of its CWA Continuing Planning Process and WQS review obligations established by CWA sections 303(c) and (e), 33 U.S.C. § 1313(c), (e). Such a step is necessary

to provide, in the future, an objective basis for ensuring compliance with water quality criteria that will protect the public from the severe health and environmental risks posed by *Microcystis aeruginosa* blooms in the Klamath River basin.

The Citizens' Concern for the Klamath River

The Citizens and their members regularly use the Klamath River below the Copco and Iron Gate Dam Reservoirs as well as while it passes through the reservoirs.

The Karuk Tribe is a federally recognized tribe with ancestral homelands bisected by the Klamath River. Historically, the Karuk occupied over 90 villages along the Klamath and Salmon Rivers with fisheries associated with each. Today, the Karuk fishery is limited to a ceremonial and subsistence dip net fishery at Ishi Pishi Falls near Somes Bar, California. In addition to direct exposure to microcystin toxin through fishing, Karuk ceremonial leaders are exposed while conducting and participating in religious and cultural ceremonies. For example, the Pikiowish, or World Renewal, ceremonies are conducted in accordance to a lunar calendar, but are typically held from early August to early September. This coincides with the blooms of *Microcystis aeruginosa* in reservoirs upstream of ceremonial sites. The ceremonies require priests and practitioners to bathe ritualistically in the Klamath River for days at a time. This makes ceremonial leaders and participants more likely to suffer adverse health impacts than an average recreational user.

Klamath Riverkeeper's members recreate throughout the Klamath River watershed, engaging in fishing, hiking, boating and observing wildlife. Members of Riverkeeper use Klamath River waters both within and downstream of the Iron Gate and Copco Reservoirs. Since its formation, Riverkeeper has been directly involved in numerous water quality proceedings regarding the Klamath River, including Total Maximum Daily Load ("TMDL") development for the river as well as its tributaries.

The Citizens are further aware that many commercial fishermen make their livelihoods harvesting and marketing salmon from the Klamath River, including harvesting hatchery fish reared just below Iron Gate Dam at Iron Gate Hatchery, by which activities these fish are introduced into the chain of commerce for consumption by the general public. Any trace of these toxins in commercially sold fish could devastate consumer confidence in this food source and destroy their markets.

Regulatory Background

CWA section 303(d) expressly requires each State to identify waters within its boundaries for which "the effluent limitations required by section 301(b)(1)(A) and section 301(b)(1)(B) of this title are not stringent enough to implement any water quality standard applicable to such waters." 33 U.S.C. §1313(d)(1)(A); *see also* 40 C.F.R. § 130.7(b), (d). CWA section 303(d) contains no limitations on this duty. Thus, if the technology-based effluent limitations required by CWA section 301(b)(1)(A) and the other limitations required by CWA section 301(b)(1)(B) have not resulted in a State's given water body meeting applicable WQS, then that water must be identified as a WQLS. Moreover, "applicable WQS" mean *all* "water

quality standards established under section 303 of the Act, *including . . . narrative criteria,* [and] *waterbody uses.* 40 C.F.R. § 130.7(b)(3).

Applicable WQS in the Basin Plan include several narrative water quality objectives designed to ensure that the designated beneficial uses of the Klamath River and the Reservoirs are attained. The Basin Plan prohibits toxicity: "All waters shall be maintained free of toxic substances in concentrations that are toxic to, or that produce detrimental physiological responses in human, plant, animal, or aquatic life." Basin Plan at 3-4.00. The Basin Plan establishes a standard for "Color," stating that "[w]aters shall be free of coloration that causes nuisance or adversely affects beneficial uses." *Id.* at 3-3.00. The Basin Plan prohibits excessive "Floating Material," providing that "[w]aters shall not contain floating material, including solids, liquids, foams, and scum, in concentrations that cause nuisance or adversely affect beneficial uses." *Id.* The Basin Plan restricts "Suspended Material" - "[w]aters shall not contain suspended material in concentrations that cause nuisance or adversely affect beneficial uses." *Id.* The Basin Plan precludes the concentration of "Biostimulatory Substances" - '[w]aters shall not contain biostimulatory substances in concentrations that promote aquatic growths to the extent that such growths cause nuisance or adversely affect beneficial uses. *Id.* The standard for "Tastes and Odors" provides that "[w]aters shall not contain taste- or odor-producing substances in concentrations that impart undesirable tastes or odors to fish flesh or other edible products of aquatic origin, or that cause nuisance or adversely affect beneficial uses." *Id.*

The Basin Plan further designates the following beneficial uses for the Klamath River and the Copco and Iron Gate Dam Reservoirs: Native American cultural use, water contact recreation, non-contact water recreation, commercial and sportfishing, subsistence fishing, warm freshwater habitat, cold freshwater habitat, wildlife habitat; habitat for rare, threatened, or endangered species; migration of aquatic organisms; and spawning, reproduction, or early development. Basin Plan at 2-6.00, Table 2-1. Iron Gate includes shellfish harvesting as an existing use. *Id.* Iron Gate Reservoir is identified as a potential municipal and domestic water supply, and agricultural supply. *Id.* Copco is an existing municipal and domestic water supply as well as agricultural supply. *Id.*

If the Klamath River and the Reservoirs fail to meet *any* of these water quality objectives or designated beneficial uses, the State Board and/or EPA must include so identify this failure in the California 303(d) List. In addition, the State Board and EPA *must* "identify the pollutants causing or expected to cause violations of the applicable water quality standards." 40 C.F.R. § 130.7(b)(4); *see also* EPA, "National Clarifying Guidance for 1998 State and Territory Section 303(d) Listing Decisions" (Aug. 17, 1997) ("EPA 303(d) Guidance").[1]

Factual Background Concerning *Microcystis aeruginosa*

As concern has risen over the years regarding the habitat destruction and disruption of native fisheries from dams on the vast majority of the rivers of the west coast of the United

[1] Published on EPA's internet homepage at: http://www.epa.gov/OWOW/tmdl/lisgid.html

States, yet another even more insidious impact of dams has come to light - many of the dams and their resulting reservoirs are toxic, blue-green algae factories. By damming rivers that are high in nutrients, impounding them in reservoirs, then warming those waters in a quiescent environment, dam operators have created a perfect environment for the growth and proliferation of blue-green algae, or what are also known as cyanobacteria. Many genera of cyanobacteria produce a variety of neurotoxins, liver toxins (hepatotoxins) and other toxins poisonous to both humans and wildlife. While an algae cell remains healthy, toxins will remain within the cell. Under certain growth conditions, healthy algal cells secrete toxins. As the algae cells age, die or break open, including for example when algaecides are applied, the cells release their toxins into the water.

Microcystis aeruginosa is one such cyanobacteria. When present, *Microcystis aeruginosa* is found on and near the surface of relatively still lakes and reservoirs, appearing as mats of scum and giving the water a green-hue. This blue-green algae produces the potent toxin microcystin. Microcystin is a hepatotoxin, the liver being its ultimate target. Microcystins are highly toxic at very low dosages. Exposure to *Microcystis aeruginosa* and microcystin occurs through oral ingestion, aspiration of water into the lungs, inhalation of mist and skin contact. Stone, David and William Bress, "Addressing Public Health Risk For Cyanobacteria in Recreational Freshwaters: The Oregon and Vermont Framework," Integrated Envt'l Assess. & Management, Vol. 3, No. 1, p. 139 (2007) ("Stone & Bress") (Exhibit A). Microcystin can accumulate in shellfish and fish tissue. *Id.* Microcystin has been measured not only in the livers and viscera of exposed fish, but also their fillets. *Id.* Cooking fish or heating water does not break down microcystins. *Id.* at 139-140. Because the death of the *Microcystis aeruginosa* releases its toxins into the surrounding waters, released toxins will persist after a blue-green algae bloom dissipates. *Id.* at 142. Exposure to toxin can be exacerbated by eager recreational users entering the water shortly after a bloom has dissipated. *Id.* Exposure can result in serious gastrointestinal problems, nausea, vomiting, flu-like symptoms, sore throat, blistering, eye and ear irritations, rashes, visual disturbances and death through liver failure. *Id.* at 137.

Klamath River Waters' Failure to Meet Water Quality Objectives

EPA and the State Board have an array of standards established by the World Health Organization ("WHO") and various states within the United States upon which either could and should rely to find that the levels of cyanobacteria and microcystin in the Klamath River and the Reservoirs exceed various of the Basin Plan's water quality objectives. WHO has established several standards for cyanobacterial levels based on various risk levels. WHO has published a provisional drinking water guideline value of 1 µg/l for microcystin-LR. Chorus, Ingrid & Jamie Bartram, eds., Toxic Cyanobacteria In Water: A Guide To Their Public Health Consequences, Monitoring And Management § 5.2.2 (World Health Organization 1999) ("WHO Guide") (Exhibit B). WHO has established a low risk level of 20,000 cyanobacterial cells/ml. *Id.* At that level, data indicates that exposed individuals may still experience skin irritation and gastrointestinal illness. WHO's moderate probability of health effect threshold is set at 100,000 cyanobacterial cells/ml. *Id.* More long-term illnesses could result from exposure at this level, in addition to skin irritation and gastrointestinal illness. WHO published a tolerable daily intake ("TDI") value of .04 µg kg bw-1 corresponding to the amount of potentially harmful substances that can be consumed daily over a lifetime with negligible risk of adverse health effects. *Id.*

WHO also sets a high risk level when algal scums are present, which can increase cell densities a 1000 to 1,000,000 fold and where whole body exposure to or ingestion or aspiration of any cyanobacteria scum may occur. *Id.* When a person or animal is exposed to cyanobacterial scum, there is a potential for acute poisoning and even death. "It has been calculated that a child playing in a *Microcystis* scum for a protracted period and ingesting a significant volume could receive a lethal exposure. . . ." *Id.*

The State of Oregon has employed a guidance level for *Microcystis aeruginosa* and microcystin of 40,000 cells/ml and 8 µg/l respectively. Stone & Bress at 142 (Exhibit A). Vermont also has established guidance levels of cyanobacterial blooms. Vermont closes beaches along Lake Champlain where microcystins are detected at 6 µg/l or greater. *Id.* at 140. Both Oregon and Vermont close beaches whenever there is a visible bacterial scum present. *Id.* at 140-41. Nebraska closes lakes and beaches along lakes to recreational use when microcystins are detected at 20 µg/l or higher.

For many years, there have been well-documented excessive algal blooms occurring in Copco and Iron Gate Reservoirs, particularly during the summer and early fall months. *See* Kann, Jacob, "*Microcystis aeruginosa* Occurrence in the Klamath River System of Southern Oregon and Northern California, pp. 12 (Feb. 3, 2006) ("Kann 2006") (Exhibit C); Letter from Russ J. Kanz, Envt'l Specialist, SWRCB to Magalie R. Salas, FERC at 11 (Apr. 22, 2004) (noting the presence of "offensive algal blooms and associated odors" in the reservoirs) (Exhibit D); Karuk Tribe of California Submission to FERC, Recommended Terms and Conditions, Klamath Hydroelectric Project at 7 (March 28, 2006) ("Karuk Terms") (Exhibit E). Data collected by PacifiCorp and the Karuk Tribe Department of Natural Resources over the last six years demonstrates the occurrence of dangerous *Microcystis aeruginosa* blooms in the Copco and Iron Gate Reservoirs. Kann 2006 at 12; *Id.* at 15. Analyses of a water sample taken from Copco Reservoir by the Klamath Basin Tribal Water Quality Workgroup in September 2004 confirmed the presence of *Microcystis aeruginosa* and its accompanying toxin microcystin in that reservoir. Subsequently, in 2005 and 2006, the Karuk Tribe Department of Natural Resources carried out comprehensive monitoring of both reservoirs for the presence of cyanobacteria and microcystin, again finding very high levels of *Microcystis aeruginosa* within the reservoirs.

PacifiCorp conducted algae sampling in Copco and Iron Gate Reservoirs from 2001 to 2004. Kann 2006 at 9 (Table 2). Almost all of PacifiCorp's samples were taken at various depths, ranging from an integrated sample extending down to 10 meters or a grab sample at various depths from 0.5 meters to 8 meters. *Id.* at 12. See also Kann, Jacob and Eli Asarian, "Technical Memorandum: Longitudinal Analysis of Klamath River Phytoplankton Data 2001-2004, p. 1 (Sept. 2006) ("Kann & Asarian 2006") (Exhibit F). Because *Microcystis aeruginosa* floats and concentrates near the surface of waterbodies, PacifiCorp's data would underestimate the concentrations of algae at the surface of the reservoirs where water contact recreation would occur. See Kann & Asarian 2006 at 16; Kann, Jacob, "Partial Seasonal Summary of 2006 Toxic Microcystis aeruginosa Trends in Copco and Iron Gate Reservoirs and the Klamath River CA." p. 12 (Nov. 2006) (Kann 2006a) (Exhibit G). Nevertheless, from July through October of the sampling period, 30% of the 13 samples taken by PacifiCorp from Copco Reservoir showed detectable levels of *Microcystis aeruginosa* with 5 of those samples

containing greater than 10,000 cell/ml of *Microcystis aeruginosa*. *Id.* at 9 (Table 2). Similarly, despite being taken at depth, 29% of the 12 samples taken from Iron Gate reservoir showed the presence of *Microcystis aeruginosa* with 2 of those samples above 10,000 cell/ml. *Id.* Notably, the two occasions where PacifiCorp directly sampled the surface of the reservoirs where blooms were present contained extremely high levels of *Microcystis aeruginosa* - a 2003 sample of Copco reservoir containing 18 million cells/ml or ~20,000 colonies/ml and a 2005 sample reporting 6.6 million cells/ml. *Id.* at 12.

Levels of *Microcystis aeruginosa* and microcystin measured in Copco and Iron Gate reservoirs during 2005 and 2006 greatly exceed the health-based standards published by WHO and the State of Oregon. In 2005, Susan Corum of the Karuk Tribe Department of Natural Resources took samples from various locations in the two reservoirs. Kann, Jacob and Susan Corum, "Summary of 2005 Toxic *Microcystis aeruginosa* Trends in Copco and Iron Gate Reservoirs on the Klamath River, CA" at 3-4 (March 2006) (Kann & Corum 2006) (Exhibit H). See also Kann, Jacob, Ph.D., "Toxic Cyanobacterial Blooms in the Klamath River System, 2005", PowerPoint Presentation (Nov. 8, 2005) ("Kann PowerPoint") (Exhibit I). The sampling locations were designed to monitor various conditions and key locations within the reservoirs including open water, calm shoreline areas and some shorelines adjacent to popular boat launch areas and residences. *Id.* Samples were taken bi-weekly beginning in July 2005 and concluding at the beginning of November 2005. *Id.* at 3, 7-9 (Table 2).

Beginning in July 2005, Kann and Corum measured levels of *Microcystis aeruginosa* and microcystin well-above the standards published by WHO and the State of Oregon. Cell counts of *Microcystis aeruginosa* and levels of microcystin increased as the summer progressed peaking in September at a cell count of 163 million *Microcystis aeruginosa* cells/ml and 1994.83 µg/l of microcystin along the western shoreline of Copco Reservoir. Those levels exceeded the WHO moderate risk levels for *Microcystis aeruginosa* and microcystin by 1,630 times and 99.7 times, respectively. Kann & Corum at 8 (Table 2). Although exhibiting variability both temporally and spatially, Kann & Corum detected high levels of *Microcystis aeruginosa* and microcystin in both reservoirs from July through the end of October 2005. Levels of *Microcystis aeruginosa* and microcystin at most of the reservoir monitoring stations exceeded WHO's moderate risk levels for the vast majority of days samples were taken from August through October. *Id.* at 12.

The Karuk Tribe Department of Natural Resources continued water sampling in 2006. Blooms of *Microcystis aeruginosa* once again were observed beginning in mid-July. Levels of *Microcystis aeruginosa* and microcystin were extremely high as soon as the blooms appeared. On July 13, 2006, Kann measured 11 million cells of *Microcystis aeruginosa* per ml and an accompanying microcystin level of 2,286 µg/L in Copco Reservoir. Kann 2006a at 4 (Exhibit G). That level of *Microcystis aeruginosa* was over 100 times the WHO moderate risk level and the microcystin concentration was over 300 times greater than the tolerable daily intake level published by WHO for a 40 pound child. *Id.* at 6 (Table 2). Similar levels of *Microcystis aeruginosa* were detected throughout the summer and into October, with a maximum level of *Microcystis aeruginosa* of 393,395,000 cells/ml measured on July 27, 2006, which is 3,934 times the WHO moderate health risk. *Id.* Although, microcystin results were still pending at the time of Dr. Kann's November 2006 report, the data for the summer months also showed consistently high levels of the toxin with a maximum concentration of 12,176 µg/l measured on August 8,

2006 - 1,682 times the TDI level for posting adopted by the State of Oregon and the Klamath Basin Blue-Green Algae Working Group. *Id.* The levels of microcystin measured in July and August 2006 were in fact the highest levels ever recorded in the two reservoirs and "among the highest recorded in the world." *Id.* at 5.

The Copco and Iron Gate Reservoirs are generating massive quantities and concentrations of *Microcystis aeruginosa* and microcystin. Dr. Kann cites to multiple lines of evidence pointing to the role of PacifiCorp's reservoirs in creating ideal habitat conditions for *Microcystis aeruginosa*. Kann 2006 at 18-19; *see* Karuk Terms at 7-8 (Exhibit E); FERC Draft Environmental Impact Statement for the Klamath Hydroelectric Project, Section 3 at 3-153 ("DEIS") (Exhibit J). As Dr. Kann concludes, "[t]aken together these data provide compelling evidence that Copco and Iron Gate Reservoirs are providing ideal habitat for MSAE; increasing concentrations dramatically from those upstream, and exporting MSAE to the downstream environment." Kann 2006 at 19. Likewise, Dr. Kann and Asarian concluded that:

> these analyses show that although the Klamath River receives a large loading of algal biomass (made up largely of the cyanophyte, APHA) from UKL, the analyzed data provide clear evidence that Copco and Iron Gate Reservoirs are providing habitat conditions that foster increased overall phytoplankton biovolume comprised largely of nitrogen-fixing cyanophyte species as well as toxigenic [*Microcystis aeruginosa*].

Kann & Asarian 2006 at 34 (Exhibit F); *see also* WHO Guide at 14, § 1.1 (Exhibit B) ("[b]y increasing retention times and surface areas exposed to sunlight, impoundments change the growth conditions for organisms and promote opportunities for cyanobacterial growth and water-bloom formation through modifications to river discharges").

Dr. Kann, applying the WHO and State of Oregon standards, concludes that:

> [*Microcystis aeruginosa*] bloom conditions in Copco and Iron Gate Reservoirs in 2006 represented a clear public health risk with respect to water contact recreation. Maximum [*Microcystis aeruginosa*] cell density and microcystin concentrations measured in 2006 were higher than those in 2005, and were among the highest reported in the literature (e.g., Chorus and Bartram 1999). The maximum microcystin value of 12,176 µg/L exceeded the 8 µg/L threshold level by 1522 times. Monitoring data in 2006 show that the 2005 conditions were not anomalous and that toxigenic blooms are likely to be a recurring phenomenon.

Kann 2006.

Microcystis aeruginosa and microcystin toxin presence in and downstream of the Copco and Iron Gate reservoirs also poses serious threats to pets and wildlife. According to Siskiyou County public health officer Terry Barber, "[o]ccasionally domestic animals and livestock have been poisoned by toxins in the algae bloom." Siskiyou Daily News, "Health risks of blue-green algae were overstated" (Aug. 26, 2005) (Exhibit N). There is also anecdotal evidence from a landowner on the Copco Reservoir of one or more animal deaths in the late 1990's. S. Corum (pers. comm.).

The levels of microcystin detected in the Klamath reservoirs also indicate a potential for toxin accumulation in fish tissue. Kann 2006a at 12. Several studies indicate that microcystin may be bioaccumulative. *See* Magalaes, V.F., et al., "Microcystins (cyanobacteria hepatotoxins) bioaccumulation in fish an crustaceans from Sepetiba Bay (Brasil, RJ)" Toxicon 42 (2003) (Exhibit O); Liqiang, X. et al., "Organ distribution and bioaccumulation of microcystins in freshwater fish at different trophic levels from the eutrophic Lake Chaohu, China," Envt'l Toxicology, Vol. 20, Issue 3 (2005) (Exhibit P). Indeed, the Yurok Tribe's Environmental and Fisheries Programs, despite a very limited number of samples, has already detected trace levels of microcystin in steelhead livers from fish collected in the lower Klamath River. Kann 2006 at 18. "Although sample size is limited, low to trace quantities of microcystin in steelhead livers in the lower Klamath River indicate that these fish were exposed to toxin levels in the river environment, and indicate the potential for toxin uptake to occur." *Id.* No one yet has attempted to measure microcystin levels in rainbow trout, yellow perch, largemouth bass and other fish caught and eaten by recreational anglers in Copco and Iron Gate Reservoirs, though apparently the State Board is planning to do some fish tissue sampling this year. Because of their proximity to the *Microcystis aeruginosa* blooms and residence in waters known to be high in microcystin concentrations, one would expect the threat of microcystin accumulation to be even greater in those fish.

Microcystis aeruginosa blooms also result in an unsightly green tint to vast expanses of both the Copco and Iron Gate Reservoirs. See, e.g. Kann 2006a at 9. These blooms result in unsightly floating scum within the two reservoirs.

Given the above, the conclusion is inescapable that the presence of *Microcystis aeruginosa* and microcystin toxin is causing the Klamath River and the Reservoirs not to meet Basin Plan water quality objectives for toxicity, color, floating material, suspended material biostimulatory substances, and odors. The levels of *Microcystis aeruginosa* and microcystin toxin detected in the reservoirs at issue have repeatedly well exceeded levels identified by the WHO and the State of Oregon as posing toxicity risks to human health and the ecosystem. The blue-green algae creates well-documented unaesthetic, nuisance discoloration of these waters. *Microcystis aeruginosa* and microcystin toxin are floating and/or suspended substances that create nuisance conditions that adversely affect beneficial uses. *Microcystis aeruginosa* and microcystin toxin are obviously present due to biostimulatory substances that have prompted "aquatic growths to the extent that such growths cause nuisance or adversely affect beneficial uses." *Microcystis aeruginosa* creates nuisance odors in these waters.

Klamath River Waters' Failure To Meet Designated Beneficial Uses

The conclusion is further unassailable that the presence of *Microcystis aeruginosa* and microcystin toxin in the Klamath River and the Reservoirs are causing these waters not to meet designated beneficial uses including Native American cultural use, water contact recreation, non-contact water recreation, commercial and sportfishing, subsistence fishing, warm freshwater habitat, cold freshwater habitat, wildlife habitat; habitat for rare, threatened, or endangered species; migration of aquatic organisms; and spawning, reproduction, or early development. The *Microcystis aeruginosa* blooms have made those waters not safe for use by the Citizens and the public annually from July through October, significantly impairing the Citizens and/or the

public's ceremonial, recreational, and aesthetic uses of the Klamath River and even the livelihoods and health of many persons.

As the Regional Board's Executive Officer stated in a press release issued on September 30, 2005, "The public needs to take the microcystin toxin in this algae seriously . . . The levels of algae and associated toxins measured in parts of the river are high enough to pose health risks to anyone drinking or bathing in the water, particularly children and animals." U.S. EPA Region 9 Press Release, "Federal, state and tribal authorities advise caution on dangerous Klamath River algae" (Sept. 30, 2005) (Exhibit K). Indeed, at the behest of the Regional Board and EPA, the two reservoirs have been posted with health advisories warning people to "avoid water contact on Copco and Iron Gate Reservoirs due to high levels of blue-green algae that can produce harmful toxins. . . . Children and pets are at greatest risk." Regional Board Health Warning Sign (Exhibit L). Despite the posted warnings, people may still use the reservoirs for recreation. *See* Kann & Corum 2006 at 22 (photograph of water skier in area of active bloom); S. Corum, photograph taken on October 18, 2005 of man fishing in algae bloom with measured cell count of 8.8 million cells/ml along north shore of Iron Gate Reservoir (Exhibit M).

EPA Must Amend the California 303(d) List To Reflect the Impairment Caused by *Microcystis aeruginosa* Blooms

Given the above, the State Board and now EPA has a mandatory duty to identify in the California 303(d) List that the Klamath River and Copco and Iron Gate reservoirs fail to meet Basin Plan water quality objectives for toxicity, color, floating material, suspended material biostimulatory substances, and odors, and for the following designated beneficial uses: Native American cultural use, water contact recreation, non-contact water recreation, commercial and sportfishing, subsistence fishing, warm freshwater habitat, cold freshwater habitat, wildlife habitat; habitat for rare, threatened, or endangered species; migration of aquatic organisms; and spawning, reproduction, or early development. As noted, 40 C.F.R. § 130.7(b)(1) and (d) requires the States and/or EPA to include in 303(d) lists waterbodies which fail to meet "*any* water quality standards." It is immaterial to this duty that these Basin Plan water quality objectives are narrative rather than numeric or establish designated uses rather than water quality criteria. *See* 40 C.F.R. § 130.7(b)(3) ("For the purposes of listing waters under [CWA § 303(d) and] § 130.7(b), the term "applicable water quality standards" refer to those water quality standards established under section 303 of the Act, including . . . *narrative criteria*, [and] *waterbody uses*."). EPA 303(d) Guidance provides useful illustration. This guidance indicates by way of example that waters not meeting either a narrative criterion for temperature or even a designated use due to excessive temperature should be identified in 303(d) Lists:

> [W]aterbodies that do not meet an applicable State water quality criterion for temperature or a designated use due to temperature should be listed. Listing is appropriate because the applicable water applicable water quality standard is not met. Heat, the cause of the impairment, is defined as a "pollutant" under section 502(6) of the Clean Water Act and can be allocated. It is immaterial to the listing decision whether the source of the temperature-related impairment is a thermal discharge or solar radiation. Both are sources of heat, and the heat can be allocated through the TMDL process.

Moreover, the State Board and/or EPA has a mandatory duty to specify that *Microcystis aeruginosa* and microcystin toxin are the "pollutants" that are causing these waters not to meet these Basin Plan WQS. As noted, 40 C.F.R. § 130.7(b)(4) requires the States and/or EPA to "identify the pollutants causing or expected to cause violations of the applicable water quality standards." *See also* EPA 303(d) Guidance ("40 CFR section 130.7(b)(4) requires States to identify, in each section 303(d) list submitted to EPA, the 'pollutants causing or *expected to cause* violations of the applicable water quality standards'"). As the above discussion underscores, *Microcystis aeruginosa* and microcystin toxin are well-documented to be the "pollutants" that are causing these waters not to meet the Basin Plan WQS in issue. There can be no doubt that *Microcystis aeruginosa* and microcystin toxin are "pollutants" within the meaning of the CWA. *See* CWA § 502(6), 33 U.S.C. § 1362(6) (pollutant includes "biological materials"); *National Wildlife Fed. v. Consumers Power Co.*, 862 F.2d 580, 583 (6th Cir. 1988); *United States v. Hamel*, 551 F.2d 107, 9 ERC 1932 (6th Cir. 1977).

The State Board has declined to list the Klamath River and Iron Gate and Copco Reservoirs as not meeting Basin Plan water quality standards due to *Microcystis aeruginosa* and microcystin toxin contamination on the erroneous basis that there are no WQS for either of these pollutants. EPA's regulations and the EPA 303(d) Guidance Document, however, make clear that 303(d) lists should identify the pollutants causing waterbodies not to meet even narrative water quality standards regardless of whether there is a water quality criteria or objective for the impairing pollutant itself. Thus, the EPA 303(d) Guidance Document directs that waters impaired by excessive heat due to a combination of thermal discharges and solar radiation should be listed, even though WQS include no water quality criteria/objectives for thermal discharges or solar radiation themselves. The State Board has further declined to list these waters as impaired by *Microcystis aeruginosa* and microcystin toxin contamination on the erroneous basis that the California 303(d) List need only identify waters impaired by "pollutants" not "pollution." One, even if this is true, *Microcystis aeruginosa* and microcystin toxin are clearly "pollutants" as discussed above. Two, this ignores the plain meaning of the statute and accompanying EPA Regulations. The word "pollutant" appears *only* in CWA section 303(d)(1)(C)'s directive of when the States must prepare TMDLs, i.e., when a pollutant causing impairment has been identified by EPA as suitable for TMDL calculation. By contrast, the word "pollutant" does not appear in CWA section 303(d)(1)(A)'s directive, which plainly mandates that the States identify all waters not meeting their WQS, regardless of whether the cause is a "pollutant" capable of being addressed by a TMDL calculation or instead due to other "pollution" causes. Three, this is inconsistent with the State Board's own past practices and EPA guidance and practice. As noted, the State Board has already listed the Klamath River as not meeting WQS due to "pollution" conditions in listing the river as not meeting narrative Basin Plan WQS for dissolved oxygen and temperature. Moreover, the EPA 303(d) Guidance specifically states that waters not meeting WQS due to "pollution" conditions such as excessive temperature should be listed. By analogy, just as the Klamath River and the Reservoirs should be listed for not meeting narrative, pollution-condition related WQS for temperature and dissolved oxygen, these waters should further be listed for all other narrative, pollution-condition WQS the waters are not meeting due to *Microcystis aeruginosa* blooms.

Conclusion

EPA should amend the California 303(d) List to state that, due to the contamination of these waters with elevated levels of *Microcystis aeruginosa* and microcystin toxin, the Klamath River and the Copco and Iron Gate Dam Reservoirs are failing to attain applicable Basin Plan WQS for the following water quality objectives: toxicity, color, floating material, suspended material biostimulatory substances, and odors, and for the following designated beneficial uses: Native American cultural use, water contact recreation, non-contact water recreation, commercial and sportfishing, subsistence fishing, warm freshwater habitat, cold freshwater habitat, wildlife habitat; habitat for rare, threatened, or endangered species; migration of aquatic organisms; and spawning, reproduction, or early development.

In addition, the Citizens urge EPA separately to direct the State Board and Regional Board to amend the Basin Plan to establish appropriate water quality criteria/water quality objectives for *Microcystis aeruginosa* and microcystin toxin as part of California's implementation of its CWA Continuing Planning Process and WQS review obligations established by CWA sections 303(c) and (e), 33 U.S.C. § 1313(c), (e).

Sincerely,

Regina Chichizola
Klamath Riverkeeper

April 16, 2007

Peter Kozelka, TMDL Liaison
U.S. Environmental Protection Agency Region IX
Water Division (WTR-2)
75 Hawthorne Street
San Francisco, CA 94105

Re: 72 Fed. Reg. 1275-76 (March 15, 2007) – "Clean Water Act Section 303(d): Availability of List Decisions," http://www.epa.gov/fedrgstr/EPA-WATER/2007/March/Day-15/w4663.htm

VIA EMAIL: kozelka.peter@epa.gov

Dear Mr. Kozelka:

On behalf of the California Coastkeeper Alliance (CCKA) and its 13 member Waterkeepers, the Natural Resources Defense Council (NRDC) and Heal the Bay, we welcome the opportunity to provide comments with respect to U.S. EPA's review of the California 2006 303(d) list adopted by the State Water Resources Control Board (SWRCB), as detailed in the above-cited Federal Register notice. These comments incorporate by reference the comments submitted by Heal the Bay and Klamath Riverkeeper on April 13, 2007.

We would first like to commend U.S. EPA for highlighting several key concerns with California's 303(d) Listing Policy and based on that assessment, appropriately adding a number of impaired waters to the 2006 list, including dozens of beaches for bacterial indicators impairment. These additions are based on a more accurate reading of federal law and regulations, and will ensure that much-needed attention is paid to these polluted water bodies.

In particular, we support EPA's conclusions that part of California's Listing Policy may be contrary to federal regulations, and agree with EPA's concerns with regard to the following elements of California's 2006 listing process:

- application of "weight of evidence" analysis procedures
- listing thresholds used for toxic, bacterial and some conventional pollutants that are inconsistent with applicable water quality standards,
- minimum sample size requirements,
- interpretation of narrative water quality standards, and
- documentation prepared to support decisions.

These and other concerns were raised by the environmental community in their letters to the State Board both last fall and in 2004. Indeed, a number of them were previously raised by U.S. EPA in 2004 on the

draft proposed Listing Policy, and were raised again at a recent SWRCB workshop on the Policy.[1] We urge EPA to work closely with the state to ensure that these mistakes are not repeated in the 2008 listing cycle.

In addition to the waters that EPA did add to the 2006 303(d) list, we ask that EPA also add waters with impairments related to toxic algae, as requested by commenters during the 2006 listing cycle.[2] With respect to Northern California algae listings, we support and incorporate by reference the April 13th comments submitted by Klamath Riverkeeper, and ask that EPA amend the 2006 Section 303(d) list to include the Klamath River and the Iron Gate and Copco Dam Reservoirs due to impairments caused by *Microcystis aeruginosa* and microcystin toxin. As described in detail in the April 13th Klamath Riverkeeper letter, these impairments not only need to be formally identified as a matter of law, but also must be identified as a practical matter, so that the most appropriate means are chosen to reverse the contamination caused by these pollutants.

With respect to the Southern California, we support Heal the Bay's request to not delist fourteen water segments which had been on the list for excess algal growth impairments in the Los Angeles Region, and their request to add two additional reaches to the List. As detailed in Heal the Bay's April 13th letter, proxy listings (*e.g.*, for nitrogen) are insufficient to address the algal impairments in the delisted waters, which is a key reason that the Clean Water Act requires listings for all impairments.

* * *

U.S. EPA and the California State Water Resources Control Board are charged with protecting the health of our waters from further degradation, and ensuring cleanup of waters that "fall through the cracks." Accordingly, EPA and the state should take great care in capturing all polluted waters as directed by Section 303(d) and its accompanying regulations. We thank EPA for its attention to these mandates in adding the identified impaired waters to California's 2006 303(d) list, and urge EPA to also list the additional impaired waters in Southern and Northern California, as described above. Thank you.

Sincerely,

Linda Sheehan
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[1] Letter from Alexis Strauss, U.S. EPA to Arthur Baggett, SWRCB (Feb. 18, 2004).
[2] These listings would be consistent with ongoing EPA interpretation of Section 303(d); for example, there are 69 approved TMDLs nationwide for "algal growth." (U.S. EPA, "Approved TMDLs by General Pollutant," http://oaspub.epa.gov/waters/national_rept.control#TPOL.)

PROPOSED 2006 CWA SECTION 303(d) LIST OF WATER QUALITY LIMITED SEGMENTS

NORTH COAST REGIONAL BOARD

SWRCB APPROVAL DATE: OCTOBER 25, 2006

REGION	TYPE	NAME	CALWATER WATERSHED	POLLUTANT/STRESSOR	POTENTIAL SOURCES	ESTIMATED SIZE AFFECTED	PROPOSED TMDL COMPLETION
1	R	Klamath River HU, Butte Valley HA	10580000				
				Nutrients		**253 Miles**	**2019**
				The Klamath River, from source to mouth, is listed as water quality impaired (by both Oregon and California) under Section 303(d) of the Federal Clean Water Act. In 1992 the California State Water Quality Control Board (SWQCB) proposed that the Klamath River be listed for both temperature and nutrients, requiring the development of Total Maximum Daily Load (TMDL) limits and implementation plans. The United States Environmental Protection Agency (USEPA) and the NCRWQCB accepted this action in 1993. The basis for listing the Klamath River as impaired was aquatic habitat degradation due to excessively warm water temperatures and algae blooms associated with high nutrient loads, water impoundments, and agricultural water diversions.	**Nonpoint Source**		
				Temperature, water		**253 Miles**	**2019**
				The Klamath River, from source to mouth, is listed as water quality impaired (by both Oregon and California) under Section 303(d) of the Federal Clean Water Act. In 1992 the SWQCB proposed that the Klamath River be listed for both temperature and nutrients, requiring the development of Total Maximum Daily Load (TMDL) limits and implementation plans. The United States Environmental Protection Agency (USEPA) and the NCRWQCB accepted this action in 1993. The basis for listing the Klamath River as impaired was aquatic habitat degradation due to excessively warm water temperatures and algae blooms associated with high nutrient loads, water impoundments, and agricultural water diversions.	**Nonpoint Source**		

PROPOSED 2006 CWA SECTION 303(d) LIST OF WATER QUALITY LIMITED SEGMENTS

NORTH COAST REGIONAL BOARD

SWRCB APPROVAL DATE: OCTOBER 25, 2006

REGION	TYPE	NAME	CALWATER WATERSHED	POLLUTANT/STRESSOR	POTENTIAL SOURCES	ESTIMATED SIZE AFFECTED	PROPOSED TMDL COMPLETION
1	R	Klamath River HU, Lost River HA, Tule Lake and Mt Dome HSAs	10590000	Nutrients		612 Miles	2006
				The Klamath River HU, Lost River HA, Tule Lake and Mt Dome includes the following Hydrologic Sub Areas (HSAs): Mt. Dome HSA 105.91 and Tule Lake HSA 105.92. The Klamath River, from source to mouth, is listed as water quality impaired (by both Oregon and California) under Section 303(d) of the Federal Clean Water Act. In 1992 the California State Water Quality Control Board (SWQCB) proposed that the Klamath River be listed for both temperature and nutrients, requiring the development of Total Maximum Daily Load (TMDL) limits and implementation plans. The United States Environmental Protection Agency (USEPA) and the NCRWQCB accepted this action in 1993. The basis for listing the Klamath River as impaired was aquatic habitat degradation due to excessively warm water temperatures and algae blooms associated with high nutrient loads, water impoundments, and agricultural water diversions.			
					Agriculture		
					Specialty Crop Production		
					Agriculture-subsurface drainage		
					Agriculture-irrigation tailwater		
					Agricultural Return Flows		
					Water Diversions		
					Agricultural Water Diversion		
					Habitat Modification		
					Removal of Riparian Vegetation		
					Drainage/Filling Of Wetlands		
					Natural Sources		
					Nonpoint Source		

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REGION	TYPE	NAME	CALWATER WATERSHED	POLLUTANT/STRESSOR	POTENTIAL SOURCES	ESTIMATED SIZE AFFECTED	PROPOSED TMDL COMPLETION
1	R	Klamath River HU, Lower HA, Klamath Glen HSA	10511000				
				Nutrients		609 Miles	2006
				Klamath Falls (Oregon) municipal wastewater discharge, industrial facilities, and US Bureau of Reclamation pumped discharge of agricultural waste are significant sources of nutrient loads to the Klamath River as it enters California.			
					Industrial Point Sources		
					Major Industrial Point Source		
					Minor Industrial Point Source		
					Municipal Point Sources		
					Major Municipal Point Source-dry and/or wet weather discharge		
					Minor Municipal Point Source-dry and/or wet weather discharge		
					Agriculture		
					Irrigated Crop Production		
					Specialty Crop Production		
					Pasture Grazing-Riparian and/or Upland		
					Range Grazing-Riparian		
					Intensive Animal Feeding Operations		
					Agriculture-storm runoff		
					Agriculture-subsurface drainage		
					Agriculture-irrigation tailwater		

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REGION	TYPE	NAME	CALWATER WATERSHED	POLLUTANT/STRESSOR	POTENTIAL SOURCES	ESTIMATED SIZE AFFECTED	PROPOSED TMDL COMPLETION
				Organic Enrichment/Low Dissolved Oxygen		**609 Miles**	**2006**
				Klamath Falls (Oregon) municipal wastewater discharge, industrial facilities, and US Bureau of Reclamation pumped discharge of agricultural waste are significant sources of organic enrichment of Klamath River waters flowing to California.			
					Industrial Point Sources		
					Municipal Point Sources		
					Agriculture		
					Irrigated Crop Production		
					Specialty Crop Production		
					Range Grazing-Riparian		
					Agriculture-storm runoff		
					Agriculture-subsurface drainage		
					Agriculture-irrigation tailwater		
					Agriculture-animal		
					Upstream Impoundment		
					Flow Regulation/Modification		
					Out-of-state source		
				Sedimentation/Siltation		**609 Miles**	**2019**
				If this listing is determined to be on tribal lands, USEPA should place this water body and pollutant on the section 303d list for the tribal lands. It is not the State Water Board's intent that this listing affect other actions related to decommissioning and removal of dams on the Klamath River			
					Source Unknown		
				Temperature, water		**609 Miles**	**2006**
				Flow regulation and diversion, coupled with reduced riparian vegetative cover and darker material on the channel bottom, all contribute to elevated water temperatures.			
					Hydromodification		
					Dam Construction		
					Upstream Impoundment		
					Flow Regulation/Modification		
					Water Diversions		
					Habitat Modification		
					Removal of Riparian Vegetation		
					Channel Erosion		

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REGION	TYPE	NAME	CALWATER WATERSHED	POLLUTANT/STRESSOR	POTENTIAL SOURCES	ESTIMATED SIZE AFFECTED	PROPOSED TMDL COMPLETION
1	R	Klamath River HU, Middle HA, Iron Gate Dam to Scott River	10530000				
				Nutrients		548 Miles	2006
				The Klamath River HU, Middle HA, Iron Gate Dam to Scott River includes the following Hydrologic Sub Areas (HSAs) : Beaver Creek HSA 105.35 and Hornbrook HSA 105.36. The Klamath River, from source to mouth, is listed as water quality impaired by both Oregon and California.		
					Out-of-state source		
					Nonpoint/Point Source		
				Organic Enrichment/Low Dissolved Oxygen		**548 Miles**	**2006**
				The Klamath River HU, Middle HA, Iron Gate Dam to Scott River includes the following Hydrologic Sub Areas (HSAs) : Beaver Creek HSA 105.35 and Hornbrook HSA 105.36. The impairment listing regarding dissolved oxygen was prompted by a 1997 United States Fish and Wildlife Service Report.		
					Out-of-state source		
					Nonpoint/Point Source		
				Temperature, water		**548 Miles**	**2006**
				The Klamath River HU, Middle HA, Iron Gate Dam to Scott River includes the following Hydrologic Sub Areas (HSAs) : Beaver Creek HSA 105.35 and Hornbrook HSA 105.36.			
					Hydromodification		
					Upstream Impoundment		
					Flow Regulation/Modification		
					Habitat Modification		
					Removal of Riparian Vegetation		
					Nonpoint Source		
1	R	Klamath River HU, Middle HA, Oregon to Iron Gate	10530000				
				Nutrients		**129 Miles**	**2006**
				The Klamath River HU, Middle HA, Oregon to Iron Gate Dam includes the following Hydrologic Sub Areas (HSAs): Iron Gate HSA 115.37 and Copco HSA 105.38.			
					Industrial Point Sources		
					Municipal Point Sources		
					Agriculture		
					Specialty Crop Production		
					Agricultural Return Flows		
					Internal Nutrient Cycling (primarily lakes)		
					Natural Sources		
					Nonpoint Source		

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REGION	TYPE	NAME	CALWATER WATERSHED	POLLUTANT/STRESSOR	POTENTIAL SOURCES	ESTIMATED SIZE AFFECTED	PROPOSED TMDL COMPLETION
				Organic Enrichment/Low Dissolved Oxygen		**129 Miles**	**2006**
				The Klamath River HU, Middle HA, Oregon to Iron Gate Dam includes the following Hydrologic Sub Areas (HSAs): Iron Gate HSA 115.37 and Copco HSA 105.38.			
					Industrial Point Sources		
					Municipal Point Sources		
					Agriculture		
					Irrigated Crop Production		
					Specialty Crop Production		
					Range Grazing-Riparian and/or Upland		
					Agriculture-storm runoff		
					Agriculture-subsurface drainage		
					Agriculture-irrigation tailwater		
					Agriculture-animal		
					Upstream Impoundment		
					Flow Regulation/Modification		
					Out-of-state source		
				Temperature, water		**129 Miles**	**2006**
				The Klamath River HU, Middle HA, Oregon to Iron Gate Dam includes the following Hydrologic Sub Areas (HSAs): Iron Gate HSA 115.37 and Copco HSA 105.38.			
					Hydromodification		
					Upstream Impoundment		
					Flow Regulation/Modification		
					Nonpoint Source		

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REGION	TYPE	NAME	CALWATER WATERSHED	POLLUTANT/STRESSOR	POTENTIAL SOURCES	ESTIMATED SIZE AFFECTED	PROPOSED TMDL COMPLETION
1	R	Klamath River HU, Middle HA, Scott River to Trinity River	10500000				
				Nutrients		1389 Miles	2006
				The Klamath River HU, Middle HA, Scott River to Trinity River includes the following Hydrologic Sub Areas (HSAs) : Orleans HSA 105.12, Ukonom HSA 105.31, Happy Camp HSA 105.32, and Seiad Valley HSA 105.33			
					Industrial Point Sources		
					Municipal Point Sources		
					Agriculture		
					Agriculture-storm runoff		
					Agriculture-irrigation tailwater		
					Wastewater - land disposal		
					Upstream Impoundment		
					Natural Sources		
					Nonpoint Source		
					Out-of-state source		
				Organic Enrichment/Low Dissolved Oxygen		1389 Miles	2006
				The Klamath River HU, Middle HA, Scott River to Trinity River includes the following Hydrologic Sub Areas (HSAs) : Orleans HSA 105.12, Ukonom HSA 105.31, Happy Camp HSA 105.32, and Seiad Valley HSA 105.33			
					Industrial Point Sources		
					Municipal Point Sources		
					Combined Sewer Overflow		
					Agriculture		
					Agriculture-storm runoff		
					Agriculture-irrigation tailwater		
					Upstream Impoundment		
					Flow Regulation/Modification		
					Out-of-state source		

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REGION	TYPE	NAME	CALWATER WATERSHED	POLLUTANT/STRESSOR	POTENTIAL SOURCES	ESTIMATED SIZE AFFECTED	PROPOSED TMDL COMPLETION
				Temperature, water		1389 Miles	2006
				The Klamath River HU, Middle HA, Scott River to Trinity River includes the following Hydrologic Sub Areas (HSAs) : Orleans HSA 105.12, Ukonom HSA 105.31, Happy Camp HSA 105.32, and Seiad Valley HSA 105.33			
					Hydromodification		
					Channelization		
					Dam Construction		
					Upstream Impoundment		
					Flow Regulation/Modification		
					Water Diversions		
					Habitat Modification		
					Removal of Riparian Vegetation		
					Streambank Modification/Destabilization		
					Drainage/Filling Of Wetlands		
					Natural Sources		
					Nonpoint Source		
1	R	Klamath River HU, Shasta River HA	10550000				
				Organic Enrichment/Low Dissolved Oxygen		630 Miles	2007
					Minor Municipal Point Source-dry and/or wet weather discharge		
					Agriculture-storm runoff		
					Agriculture-irrigation tailwater		
					Dairies		
					Hydromodification		
					Dam Construction		
					Flow Regulation/Modification		
					Habitat Modification		
				Temperature, water		630 Miles	2007
					Agriculture-irrigation tailwater		
					Flow Regulation/Modification		
					Habitat Modification		
					Removal of Riparian Vegetation		
					Drainage/Filling Of Wetlands		

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REGION	TYPE	NAME	CALWATER WATERSHED	POLLUTANT/STRESSOR	POTENTIAL SOURCES	ESTIMATED SIZE AFFECTED	PROPOSED TMDL COMPLETION
1	L	Klamath River HU, Tule Lake and Lower Klamath Lake National Wildlife Refuge	10590000				
				pH (high)		26998 Acres	2006
				The Klamath River HU, Tule Lake and Lower Klamath Lake National Wildlife Refuge includes the following Calwater Planning Watersheds (PWS): Lower Klamath Lake National Wildlife Refuge PWS 105.91020 and Tule Lake PWS 105.92020. The pH of surface water can influence the toxicity of dissolved materials resulting in synergistic and direct effects on biological systems. High pH levels influence ammonia concentrations which can be toxic to fish. In addition, high pH levels can increase the solubility of minerals and metals, which can effect fish and other aquatic organisms. Photosynthetic activity of algae effects carbonate cycling, which influences pH. Elevated pH levels in Tule Lake and Lower Klamath Lake National Wildlife Refuge are likely due to photosynthetic activity of algae.		
					Internal Nutrient Cycling (primarily lakes)		
					Nonpoint Source		
1	R	Mad River HU, Mad River	10900000				
				Sedimentation/Siltation		**654 Miles**	**2019**
				USEPA will develop TMDL for the Mad River. Sediment TMDLS will be developed for the area tributary to and including: (1) the Mad River (North Fork), (2) the mad River (Upper), and (3) the Mad River (Middle).			
					Silviculture		
					Resource Extraction		
					Nonpoint Source		
				Temperature, water		**654 Miles**	**2019**
				Recent (1997-2000) temperature data collected on the mainstem of the Mad River indicate that high temperature levels may be a source of impairment of cold water fisheries in the river. Data were available from 11 locations, with at least two years of record at most locations. MWAT values at all of the 11 locations exceeded 20°C, and are higher than any available temperature criteria for sub-lethal effects (reduced growth) on juvenile salmonids. Records also indicate that maximum temperatures at most of the 11 locations in most years are higher than 24°C.			
					Upstream Impoundment		
					Flow Regulation/Modification		
					Habitat Modification		
					Removal of Riparian Vegetation		
					Nonpoint Source		
					Unknown Nonpoint Source		
				Turbidity		**654 Miles**	**2019**
				Turbidity TMDLs will be developed for the area tributary to and including: (1) the Mad River (North Fork), (2) the Mad River (Upper), and (3) the Mad River (Middle).			
					Silviculture		
					Resource Extraction		
					Nonpoint Source		